

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

2521
A75445
cap 4

RETAIL LOSSES IN CALIFORNIA GRAPES MARKETED IN METROPOLITAN NEW YORK

ARS-NE-53
OCTOBER 1974

U.S. DEPT. OF AGRICULTURE
LIBRARY
RECEIVED

NOV 7 '74

PROCUREMENT SECTION
CURRENT SERIAL RECORDS



RETAIL LOSSES IN CALIFORNIA GRAPES
MARKETED IN METROPOLITAN NEW YORK

By

M. J. Ceponis and J. E. Butterfield ^{1/}

SUMMARY

Losses in the retailing of two important California table grape varieties were noted in seven metropolitan New York supermarkets during marketing periods in 1970-73. Retail losses totaled 10.5 percent in Thompson Seedless grapes and 5.5 percent in Emperor grapes. Shattering (7.4%) and internal browning (1.5%) were the leading causes of loss in the Thompson Seedless variety. Sulfur dioxide injury (2.1%) and shattering (1.8%) caused most of the loss in the Emperor variety.

INTRODUCTION

Table grapes are commonly sold in bulk in metropolitan New York, a practice, retail produce managers claim, that results in much loss from excessive handling of the berries by customers. There is little if any factual information on retail losses in most produce commodities including grapes. ^{2/} For that reason the United States Agricultural Research Service in 1970 added two popular table grape varieties to a growing list of fresh fruits and vegetables studied in metropolitan New York retail markets since 1966. Store losses encountered in retailing of the grapes were obtained during three marketing seasons. This information could provide the necessary guidelines for instituting economically feasible measures towards preservation of quality and the reduction of waste.

^{1/} Research Plant Pathologist and Biological Technician, respectively, Horticultural Crops Research, Agricultural Research Service, USDA.

^{2/} Friedman, B. A. Market diseases of fresh fruits and vegetables. Econ. Bot. 14: 145-156. 1960.

MATERIALS AND METHODS

Seven supermarkets in metropolitan New York were visited weekly throughout three marketing seasons for Thompson Seedless and Emperor grapes. Both varieties were from California. Thompson Seedless grapes were surveyed from August to November 1970-72. The Emperors were surveyed from October to April 1970-73. Losses were obtained on the amounts of both varieties displayed in each store during a 1- to 2-day test period every week during the retailing of the grapes. The discarded and heavily discounted grapes were collected from each store and taken to our Belle Mead, N. J., laboratory for a loss analysis.

RESULTS AND DISCUSSION

Thompson Seedless Grapes

Retail losses in Thompson Seedless grapes for the three marketing seasons totaled 10.5 percent (table 1.) This sizable loss was not complete waste since much of this amount was discounted heavily, commonly 75 to 80 percent. Physical defects caused 8.3 percent loss with shattering of the grapes the major loss factor, by far. The shattered or loose grapes made up 70 percent of the total retail loss. Of the defective grapes, the shattered ones were the grapes most readily discounted. Sulfur dioxide injury damaged 0.8 percent of the Thompson Seedless grapes and was the only other physical factor that caused significant loss.

While handling of grapes on display by potential customers, no doubt, contributed to shattering in the stores, a considerable amount of shattering apparently occurred in the grapes enroute to the stores. Shattered grapes were observed in boxes when opened in supermarkets before the display. Besides the obvious sensible precaution of handling the grapes with care throughout the marketing chain, a means to reduce retail losses resulting from shattering is the prepackaging of grapes into consumer units at the shipping points.

Internal browning, a physiological disorder, was of some importance in Thompson Seedless grapes, causing a retail loss of 1.5 percent (table 1). The disorder is usually associated with prolonged storage. Grapes most advanced in maturity are most susceptible. Internal browning was found most frequently in the last half of the marketing season.

Parasitic diseases caused only minor losses, spoiling 0.6 percent during the three-season period. The gray mold fungus, Botrytis cinerea, rotted 0.5 percent (table 1). The commercial practice of fumigating California grapes in storage and in transit with sulfur dioxide apparently accounted for the low disease loss in retail.

Emperor Grapes

The retail loss in Emperor grapes during the three marketing seasons was about one-half that found in Thompson Seedless (table 2). The 5.5 percent loss was more or less complete since discounted Emperors moved much more slowly in

Table 1. -- California Thompson Seedless grape losses in metropolitan New York retail outlets, August-November 1970-73

| Defects | <u>1/</u> Retail losses | |
|---------------------------------|----------------------------|---------|
| | Pounds | Percent |
| <u>Physical injuries:</u> | | |
| Shattering | 1,268.6 | 7.4 |
| Sulfur dioxide injury | 143.0 | .8 |
| Picked over bunches | 13.4 | .1 |
| Crushing | 2.1 | (2/) |
| Freezing injury | 1.1 | (2/) |
| Total | 1,428.2 | 8.3 |
| <u>Physiological disorders:</u> | | |
| Internal browning | 252.7 | 1.5 |
| Overripe, senescent | 13.7 | .1 |
| Raisining | 5.7 | (2/) |
| Total | 272.1 | 1.6 |
| <u>Parasitic diseases:</u> | | |
| Gray mold rot | 84.3 | .5 |
| Rhizopus rot | 16.0 | .1 |
| Other rots | 2.0 | (2/) |
| Total | 102.3 | .6 |
| Combined totals | 1,802.6 | 10.5 |

1/ In 17,238 pounds retailed.

2/ Trace.

Table 2. -- California Emperor grape losses in metropolitan New York
retail outlets, October-April 1970-73

| Defects | Retail losses ^{1/} | |
|---------------------------------|-----------------------------|---------|
| | Pounds | Percent |
| <u>Physical injuries:</u> | | |
| Sulfur dioxide injury | 388.2 | 2.1 |
| Shattering | 333.2 | 1.8 |
| Freezing injury | 60.4 | .3 |
| Picked over bunches | 3.4 | (2/) |
| Crushing | 3.3 | (2/) |
| | ----- | ----- |
| Total | 788.5 | 4.2 |
| <u>Physiological disorders:</u> | | |
| Overripe, senescent | 173.7 | .9 |
| Raisining | 2.1 | (2/) |
| Shot berry | 2.1 | (2/) |
| | ----- | ----- |
| Total | 177.9 | .9 |
| <u>Parasitic diseases:</u> | | |
| Gray mold rot | 46.9 | .3 |
| Rhizopus rot | 20.3 | .1 |
| Blue mold rot | 6.3 | (2/) |
| Other rots | 3.9 | (2/) |
| | ----- | ----- |
| Total | 77.4 | .4 |
| Combined totals | 1,043.8 | 5.5 |

^{1/} In 18,998 pounds retailed.

^{2/} Trace.

retail than the discounted Thompson Seedless grapes. Almost four-fifths of the retail loss was caused by physical defects, principally sulfur dioxide injury (2.1%) and shattering (1.8%). The bleaching or decolorization of the skin caused by sulfur dioxide injury made movement of Emperor grapes difficult despite heavy discounting. A small loss, 0.3 percent, was also caused by freezing damage in this variety.

Emperor grapes that were overripe and senescent comprised 0.9 percent, practically all of the loss caused by physiological defects. Raisining and shot berry caused negligible losses also.

Parasitic diseases, led by gray mold rot, caused only 0.4 percent retail loss (table 2). Other decays of note were rhizopus rot and blue mold rot. Despite the occasional injury that results from fumigating grapes repeatedly with sulfur dioxide, the treatment not only controls post-harvest diseases in storage and transit but has a beneficial carryover effect against decay in retail.

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
NORTHEASTERN REGION
AGRICULTURAL RESEARCH CENTER WEST
BELTSVILLE, MARYLAND 20705

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF
AGRICULTURE
AGR 101

